1.0 INTRODUCTION

Ciba Specialty Chemicals Corporation (Ciba) owns a former industrial facility in Toms River, New Jersey (herein referred to as the "Facility"). During its years of operation, the Facility was owned by Toms River Chemical Company, which was merged into Ciba-Geigy Corporation. The Facility was transferred to Ciba when Ciba-Geigy reorganized its operations to merge with Sandoz Corporation. The plant manufactured dyestuffs, epoxy resins and pigments. Manufacturing activities took place from 1952 to 1996, during which time various production facilities were constructed, expanded and eventually phased out of operation. Currently all production activities at the Facility have been terminated.

The historical manufacturing and wastewater treatment operations, as well as waste disposal practices, have resulted in the contamination of soil and groundwater. Remedial activities to address the site-related contamination are regulated under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). These areas of known or suspected contamination constitute the Ciba-Geigy Superfund under CERCLA and are the focus of this FS Report (herein referred to as the "Site").

Based on the results of the initial remedial investigation of the nature and extent of contamination at the Site, EPA defined the following two (2) operable units:

- Operable Unit 1 (OU-1), which pertains to the groundwater contamination; and
- Operable Unit 2 (OU-2), which pertains to the known or suspected sources of contamination.

EPA focused on identifying a remedy for OU-1 first as part of a multi-phase remedy for the Site. This decision was made because the nature and extent of groundwater contamination was better understood and implementation of a groundwater remedy would address potential public health concerns by preventing further off-site migration of groundwater. Remedy selection for OU-2 was deferred until the nature and extent of contamination within the known or suspected source areas could be more fully understood.

The remedy that was selected to address the groundwater contamination was the groundwater extraction, treatment and recharge system, which has been in full-scale operation since March 1996. This groundwater remedy prevents future off-site migration of contaminated groundwater.

The contaminated groundwater is not impacting the public drinking water supply and under the current land use, no on-site groundwater receptors exist. As part of the groundwater remedy, institutional controls are in place to prevent the future installation of drinking water wells within the affected area. The groundwater extraction, treatment and recharge system will continue to operate until the groundwater cleanup standards for aquifer restoration are met.

The initial remedial investigation, while providing sufficient detail to address the groundwater contamination, did not provide sufficient detail on the nature and extent of contamination within the source areas to determine an OU-2 cleanup remedy. EPA conducted a subsequent remedial investigation focused on the potential sources of contamination and identified twenty-one (21) known or suspected sources of contamination at the Site. These sources of contamination have been designated as "potential source areas" because they represent potential sources of contamination for the groundwater. Contaminants in these areas could continue to leach into the groundwater if they are not remediated. This continued release of contaminants into the groundwater would prolong the time it takes to clean up the groundwater to the aquifer restoration standards.

1.1 Purpose

In 1995, an Administrative Order on Consent/Statement of Work (AOC/SOW) was executed between Ciba and EPA which allowed Ciba to perform, under EPA oversight, a Feasibility Study (FS) for the potential source areas. As stated in the AOC/SOW, the purpose of the FS is to provide an evaluation of remedial alternatives for each of the potential source areas (or group of source areas) to enable EPA to select a remedy for the potential source areas that will:

- Be protective of human and the environment; and
- Facilitate the OU-1 remedial goal of aquifer restoration, or shorten the overall timeframe that the groundwater extraction, treatment and recharge system must operate.

The FS provides the framework for addressing the potential source areas based on these overall remedial goals. It was conducted in accordance with EPA's guidance on remedial investigations and feasibility studies (EPA 1988), including all aspects of public participation during the process. As documented herein, the major tasks that were conducted in support of the FS include the following:

- Site Characterization;

- Development of Remedial Action Objectives;
- Development of the Contaminant Transport Model;
- Identification and screening of remedial technologies;
- Implementation of treatability studies;
- Development of remedial alternatives; and
- The detailed analysis of remedial alternatives.

1.2 Organization of Report

The FS Report is organized into the following sections and appendices:

Section 2.0 presents background information relevant for the FS, including the Facility description, history of manufacturing activities, wastewater treatment operations and disposal practices, and the regulatory history associated with OU-1 and OU-2.

Section 3.0 presents the site characterization, which describes the current nature and extent of contamination at the Site. This section includes a summary of the site geology and hydrogeology, and the contaminant distribution within the aquifer and the potential source areas. The characterization is based on historical data as well as supplemental field data collected during the FS. Appendix A provides the detailed geostatistical characterization for each potential source area and the results of the supplemental groundwater investigation (Groundwater Profiling Study).

Section 4.0 describes the development of remedial action objectives, which provide specific goals for protecting human health and the environment and facilitating aquifer restoration. This section identifies the federal and state regulatory statutes that are pertinent to the FS process, discusses potential future land use scenarios at the Facility and provides a summary of the risk assessments that have been conducted for OU-2. A detailed discussion of the regulatory statutes, or site-specific Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered Requirements (TBCs) is provided in Appendix B.

Section 5.0 presents the Contaminant Transport Model (CTM), which is used to describe how contamination from the source areas gets into the groundwater (source mass loading) and predict the movement of the contamination within the aquifer. The CTM is used to assess the impact of the source areas on groundwater quality and determine the timeframe for aquifer restoration. Appendix C of the FS Report provides the documentation for the CTM calibration and the sensitivity analyses for model input parameters and compliance point scenarios.

Section 6.0 identifies the Preliminary Remediation Goals (PRGs), or cleanup goals, for the source areas. The PRGs provide quantitative targets for the evaluation of remedial alternatives. The protocol used to develop PRGs for each source area is provided in Appendix D.

Section 7.0 identifies, screens and evaluates potential remedial technologies for addressing contamination in the source areas. In support of this evaluation process, a number of treatability studies were conducted to provide sufficient data to comprehensively develop and evaluate

specific remedial technologies. The results of these treatability studies (In-Situ Bioremediation Pilot Cell Study, Ex-Situ Bioremediation Composting Study, Bioremediation Laboratory Screening Studies, Thermal Treatment Study and Reactive Walls Study) are provided in Appendix E. An evaluation of the natural biological attenuation of contaminants (intrinsic remediation) is provided in the Intrinsic Bioremediation Demonstration Study Report (Appendix F).

Section 8.0 describes the process whereby the remedial technologies that were retained in Section 7 are combined into remedial alternatives for addressing the potential source areas on a sitewide basis. A list of potential remedial alternatives is identified for further evaluation.

Section 9.0 provides a detailed description, evaluation and comparison of the remedial alternatives developed and described in Section 8.0. Appendix G provides the detailed cost estimates for the alternatives.

Consistent with the guidance (EPA 1988), EPA will solicit both State and community comment on the draft FS Report prior to selection of a remedy to address the contamination in the source areas. A series of public meetings and/or public availability sessions will be held to discuss the potential remedial alternatives presented in this draft FS Report. Based on the comments received, the FS Report will be finalized and EPA will issue a Proposed Remedial Action Plan, which will detail EPA's preferred remedy. After consideration of community feedback on the preferred remedy, EPA will issue a Record of Decision, which will describe the remedy selected to address contamination in the source areas.